

CLAIMS:

1. A tongue plate (10) apparatus sized to fit over a human tongue (100), the tongue plate (10) including:

- 5 a lower surface including a plurality of electronic stimulation nodes (13) operable to transmit externally generated electrical signals to stimulate sensory nerve fibers (102) within the human tongue (100) at predetermined locations; and
an upper surface including saliva flow measurement means (55) for measuring a rate of change in the saliva flow rate of a human in response to the
10 stimulation of the sensory nerve fibers (102).

2. The tongue plate (10) of Claim 1, wherein said tongue plate (10) further includes a left and right shoulder (12, 14) extending along the sides of the human's tongue, said left and right shoulders (12, 14) serving to prevent lateral slippage and
15 generally follow the contours of the human's tongue.

3. The tongue plate (10) of Claim 1, wherein the tongue plate (1) is formed with rounded edges and surfaces to prevent injury to the soft tissue of the human's tongue.
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4. The tongue plate (10) of Claim 1, wherein said electrical signals are one of AC signals, DC signals and a combination of AC and DC signals.

5. The tongue plate of Claim 1, wherein said saliva flow measurement means
25 (55) is a plurality of parallel pipes (55(1) – 55(N)) positioned in a rear portion of said upper surface of said tongue plate (10) and extend horizontally along a line parallel to a longitudinal axis of said tongue plate (10) such that at least a portion of a saliva flow produced in response to said electrical stimulation flows through said parallel pipes (55(1) – 55(N)).
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6. The tongue plate (10) of Claim 5, wherein an interior region of each of said parallel pipes (55(1)-55(N)) includes a left hinged gate (65a) and a right hinged gate (65b), working cooperatively and wherein each gate 65a, 65b is pivotable about respective left and right gate axes (70, 71) allowing said gates 65a, 65b to rotate from a first closed position to a second outwardly extending position.

7. The tongue plate (10) of Claim 1, wherein each of the plurality of stimulation nodes (13) are arranged in pole groups (20), wherein each pole group (20) includes one or more stimulation nodes (22, 24).

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8. The tongue plate (10) of Claim 1, wherein each stimulation node (22, 24) is comprised of a negative inner region encapsulated by an outer positive region for conducting said electrical stimulation.

9. The tongue plate (10) of Claim 1, wherein each stimulation node (22) is comprised of a positive inner region encapsulated by an outer negative region for conducting said electrical stimulation.

10. A system for electronically simulating taste sensations in a user's tongue, the system comprising:

a content provider (80) operable to generate tongue plate data;
an interactive device (50) in communication with the content provider (80) and configured to receive the tongue plate data therefrom, convert the tongue plate data into electronic stimulation signals and output the electronic stimulation signals to a tongue plate (10); and

the tongue plate (10) configured to receive the electronic stimulation signals from the interactive device (50) and apply the electronic stimulation signals to stimulate sensory nerve fibers (102) within the tongue (100) of a human via a plurality of stimulation nodes (13) embedded within said tongue plate (10).

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11. The system of Claim 10, wherein the content provider (80) includes a content server (82), said tongue plate data and stored/retrieved content (84) such as movies, television programs, commercials, music, and similar audio and/or video content, wherein said tongue plate data is synchronously supplied along with said stored/retrieved content (84) to said interactive device (50).

12. The system of Claim 10, wherein said interactive device (50) includes an output connector for connecting electrode lead-wires to specific ones of the plurality of stimulation nodes (13) included in said tongue plate (10).

13. The system of Claim 10, wherein said interactive device (50) is wirelessly coupled to said tongue plate (10).

14. The system of Claim 10, wherein said interactive device (50) further comprises memory means (52).

15. The system of Claim 10, wherein the tongue plate (10) further includes saliva flow rate measuring means (55) for measuring the saliva flow rate of a human.

16. The system of Claim 10, wherein the plurality of stimulation nodes (13) are arranged in pole groups (20) and each pole group (20) is comprised of one or more stimulation nodes (22, 24).

17. The system of Claim 10, wherein each pole group (20) is independently coupled to a separate channel of the interactive device (50).

18. A method for simulating taste sensations, comprising:
a) positioning a tongue plate (10) onto a tongue (100) of a user;
b) receiving, from an external source, a plurality of electronic stimulation signals at said tongue plate (10);

c) applying the received electronic stimulation signals to a plurality of stimulation nodes (13) disposed within said tongue plate (10) to electronically stimulate sensory nerve fibers (104) in said user's tongue (100); and

5 d) measuring a saliva flow rate of said user in response to said applied electronic stimulation signals.

19. The method of Claim 18, wherein said plurality of stimulation nodes (13) are configured to contact predetermined locations of an upper surface of the user's tongue (100).

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20. The method of Claim 18, wherein the receiving act (b) further comprises the acts of:

transmitting, from a content provider (80), multimedia data including tongue plate data over a network (110) to an interactive device (50);

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converting, at said interactive device (50), the transmitted tongue plate data into said electronic stimulation signals; and

providing said electronic stimulation signals to said tongue plate (10).